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ABSTRACT

This paper reviews four categories of models of motivational design, which is an aspect of instructional design that refers specifically to strategies, principles, and processes for making instruction appealing. Grounded in psychological theories of human behavior, the models in the first three categories discussed are based on person-centered theories, environmentally-centered theories, and interaction theories; the fourth group has a more pragmatic origin and includes omnibus models that incorporate both instructional design and motivational design strategies. Obstacles to motivational design are also discussed, including the unstable nature of motivation, which is related to the difficulties in establishing a useful theory of motivation; the multiplicity of motives and goal orientations of individuals; and the problem of measurement. A discussion of the growth and development of motivational design theory concludes the paper and 23 references are provided. (RP)

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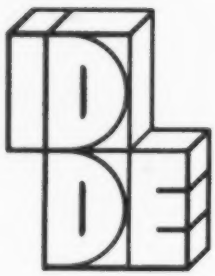

INSTRUCTIONAL DESIGN, DEVELOPMENT, AND EVALUATION

WORKING PAPERS

Motivational Design

by

John M. Keller

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MOTIVATIONAL DESIGN

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Definiton of Motivational Design

Motivational design is an aspect of instructional design which refers specifically to strategies, principles, and processes for making instruction appealing. This adds another dimension to the traditional definition of instructional design as being the process and technique of producing efficient and effective instruction. Efficiency refers to economy in the use of instructional time, materials, and other resources. It is not generally viewed as relating to the motivational aspects of instruction.

Effectiveness, however, is sometimes regarded as including motivation. The argument is that instruction cannot be effective if it is not appealing to people. But in practice, instructional designers tend to use effectiveness to refer to how well people <u>can</u> learn from an instructional event <u>given</u> that they <u>want</u> to learn (see J. M. Keller, 1983a RESEARCH SYNTHESIS [Footnote 1). The desire to learn in a given instructional setting may not come from the instruction itself; it may come from long range goals, institutional requirements, or many other sources. Instruction, like a trip to the dentist, can be very effective without being at all appealing, but the experience will be avoided unless absolutely necessary. In contrast, motivational design strives to make instruction more intrinsically interesting.

At the other extreme, instructional materials can be very appealing without being effective, especially when their appeal comes purely from their entertainment value. We have all heard variations of the following dialog:

Child: 'Boy, that textbook had a lot of good cartoons in it.'

Teacher: 'Yes, it did. What was the book about.'

Child: 'I don't know.'

Thus, motivational design is concerned with how to make instruction appealing without becoming purely entertaining.

One additional distinction of importance is that of motivational design versus behavior modification. When instructional developers or teachers begin to talk about motivation, they have a strong tendency to identify students with severe problems. This leads into the arena of behavioral diagnosis and change strategies, and it includes such things as counselling, psychological education, and even psychotherapy. This is outside the boundaries of motivational design, even though motivational design draws upon many of the same supporting concepts and theories, and good motivational design can lead to improved motivational profiles for some students. However, motivational design is concerned primarily with improving the appeal of instruction for groups of students who fall within normal boundaries of readiness to learn providing the instructor neither bores them excessively nor overexcites them.

Motivational Design Models

As established by J. M. Keller (1979 THEORETICAL BACKGROUND, 1983a), there has been very little work on developing models of motivational design, and many of the following models are not, strictly speaking, motivational design models. They combine mixtures of behavioral change and instructional design strategies. However, they are included because they represent the state-of-the-art from which new and improved motivational design models will emerge.

Motivational design models can be categorized into four groups. The first three are grounded in psychological theories of human behavior. They can be classified as person-centered theories, environmentally-centered theories, and interaction theories. The fourth group has a more pragmatic origin and includes omnibus models that incorporate both instructional design and motivational design strategies. These models tend to grow out of solutions to specific kinds of instructional problems.

Person-Centered Models

These models postulate that people have innate drives, potentials, values, and motives that influence personal motivation and development. They assume that the primary impetus for psychological growth and development comes from within the individual. Psychological theories in this area include the work on curiosity and sensation seeking (e.g. Berlyne, 1965, and Zuckerman, 1971, THEORETICAL BACKGROUND) and the succession of people such as Maslow, Herzberg, and Rogers (see Weiner, 1980 TEXTBOOK) who are concerned with human motives and self fulfillment.

The primary contributions to motivational design in this area have come from McClelland (1965 MODEL DESCRIPTION), Alschuler (1973 MODEL DESCRIPTION), and Simon (Simon, Howe, & Kirschenbaum, 1978 MODEL DESCRIPTION). McClelland (1965) published a model for bringing about change in the motive profile of an individual. It was used in many workshops, and was at the heart of the system developed by Alschuler who focused on the problem of increasing achievement motivation among school children. His approach, called psychological education, was concerned with changing behavior rather than simply making instruction more appealing.

Similarly, Simon et al. concentrated on developing strategies for helping children to be more articulate about their values, more self-aware, and more analytical. His model is not a true motivational design model as it concentrates on behavioral change, but both his model and Alschuler's are fruitful sources of examples and ideas that can be used in a motivational design model to help make the instruction relevant to the students' needs and desires.

Environmentally-Centered Models

These models assume that behavior can be adequately explained in terms of environmental influences, that the reinforcement contingencies in the environment exert powerful controls on human volition. Many people are associated with this school of thought, but one of the most important is B. F. Skinner who applied his concepts to education (Skinner, 1968 THEORETICAL BACKGROUND). The primary result of his work became known as programmed instruction which is a combination instructional design and motivational design

model. It uses the motivational principle of positive reinforcement following correct responses, and it requires that instruction be structured to insure correct responses to the fullest extent possible (see Markle, 1969 TEXTBOOK, for a review and explication of this approach).

Skinner's instructional design approach was expanded by F. S. Keller (1968 MODEL DESCRIPTION) into a plan for teaching whole courses of instruction. Called The Personalized System of Instruction (PSI), or The Keller Plan, it has many of the features used in programmed instruction. It is a complete instructional management system, and it is grounded in a set of motivational design strategies based on conditioning principles.

In a different approach, Sloane & Jackson (1974 TEXTBOOK) provide a model which describes how basic concepts of conditioning and reinforcement can be used to control the motivation of students. The model also attempts to describe how to move the students from an external reinforcement system, to an intrinsically rewarding condition. However, as Deci and others (see Lepper & Greene, 1978 RESEARCH SYNTHESIS) have shown, intrinsic motivation can be decreased by extrinsic reward systems, and can be very difficult to establish initially, or reestablish after being diminished.

Interaction-Centered Models

These models assume that neither the personal nor the environmental assumptions provide an adequate basis for understanding or explaining human motivation. In this approach, sometimes called social learning theory, or expectancy-value theory (see J. M. Keller, 1983a), human values and innate abilities are seen to both influence and be influenced by environmental circumstances. Currently, interaction-centered models are probably the most widely used in the study of human learning and motivation in an educational context. DeCharms & Muir (1978 RESEARCH SYNTHESIS) and Hunt (Hunt & Sullivan, 1974 TEXTBOOK) have offered theories and reviews of motivational research that focus on the interactions of individual traits with environmental influences on behavior. Environmental influences can include social factors such

as teaching style and the manner of using praise (Brophy, 1981 RESEARCH SYNTHESIS).

Working within the general context of expectancy-value theory, deCharms (1968 MODEL DESCRIPTION) developed an applied model with two major variables: achievement motivation representing the value component, and personal causation representing the expectancy component. DeCharm's model is patterned after the work of McClelland and Alschuler, but by including the concept of personal causation, it becomes an interactive model. It is concerned primarily with changing individual behavior to help students feel more confident, and more in control of their destinies, and it includes many motivational strategies that can be used in a general instructional design process.

Wlodkowski (1978 MODEL DESCRIPTION) provided one of the first comprehensive, applied approaches to motivation. He includes a large number of motivational factors including both humanistic and behavioral principles, and he divides motivational strategies into six categories: attitudes, needs, stimulation, affect, competence, and reinforcement. He puts these into a process model which specifies things to do at the beginning, during, and at the end of a lesson or module of instruction. His model has many excellent strategy selections, and is of primary benefit as an aid to classroom teachers.

J. M. Keller (1983a) has developed a motivational design model that is grounded in expectancy-value theory, and has four categories of motivational variables: attention, relevance, confidence, and satisfaction (ARCS). These were derived from a comprehensive review of motivational concepts and research studies. The ARCS model is a problem solving model which helps a designer identify and solve motivational problems related to the appeal of instruction. It includes strategies related specifically to the design of materials, style of teaching, and overall design of a course (J. M. Keller, 1983b; J. M. Keller & Dodge, 1982 MODEL DESCRIPTION).

Omnibus Models

These models are best described as complete solutions to given instructional goals. They are not motivational design models, but

are included here because they offer excellent examples of motivational strategies *in situ*. The models sometimes have a theoretical underpinning, but their primary basis is pragmatic in that they incorporate a complete system of teaching and instructional management that is designed to accomplish a specific type of instructional purpose. Motivational strategies are embedded in the totality of these models, but are not usually highlighted or labelled as such. Instead, they are listed under the functional category they serve. These might include such things as 'getting attention,' 'clarifying values,' 'monitoring progress,' or 'rewarding achievement.' These models are helpful to instructional designers concerned with motivation.

Joyce & Weil (1972 MODEL DESCRIPTION) provide the best compilation of these models. They use a consistent format to present 16 different teaching models which are grouped under one of four categories depending on whether the primary purpose of the model is social interaction, information processing, personal growth, or behavior modification. In three subsequent books (e.g. Weil & Joyce, 1978 MODEL DESCRIPTION) the authors provide more detailed examples of the models in use, and instructions for learning to use them.

Obstacles to Motivational Design

There are many problems related to developing a formal approach to the study and practice of motivational design, but two are of particular interest. The first concerns the unstable nature of motivation, and is related to the difficulties in establishing a useful theory of motivation. Unlike ability, which is a fairly stable and predictable human characteristic, motivation includes many factors which range from highly transitory states of arousal to reasonably enduring preferences for given types of activities. Furthermore, the intensity of these factors can vary tremendously over short periods of time, and they generally have a nonlinear, 'inverted U-curve,' relationship to performance. As motivation, or arousal, increases, the quality and quantity of performance increases to an optimal level. Beyond that, performance begins to deteriorate as motivation continues to increase. This is comparable

to moving from a state of boredom through a state of optimal arousal to a state of anxiety. Performance is less than optimal at either end of the curve.

Another aspect of this problem is the multiplicity of motives and goal orientations of individuals. At one level, people tend to have fairly stable orientations, and motive profiles. That is, a person with a high need for achievement will tend to prefer predictably different kinds of activities from a person high on need for affiliation. Yet, both of these motives can be overridden by a motive, such as the need for physical security, that assumes a higher priority in a given situation. This variability is a challenge to anyone who tries to develop models of motivational design.

The final problem, which is that of measurement, is closely related to the preceding. Just as it is difficult to obtain a functional theory of motivation, it is difficult to measure the important elements of influence and change in motivational design. There are four, and probably more, sets of variables that have to be considered in motivational design. First are the human characteristics that pertain to motivation, second are the design strategies intended to influence motivation, third are the social and environmental conditions that might influence the effectiveness of the motivational strategies, and fourth are consequences, which present special problems. All too often, changes in achievement are used as the dependent measure for motivational studies. It is better to use measures of effort, such as time-on-task, intensity of effort, or latency of response, because these are direct measures of motivation. Achievement is an indirect measure that is influenced by many non-motivational factors such as ability, prior knowledge, and instructional design factors. For a more comprehensive discussion of available measures, and measurement problems, see J. M. Keller (1983a), and J. M. Keller, Kelly, and Dodge (1978 TEXTBOOK).

Conclusions

There is little doubt that there is a growing interest in the problem of motivation, both in relation to understanding learners,

and in relation to motivational design. There are professional organizations in the United States, The Netherlands, and perhaps other countries, that are concerned exclusively with problems of motivation in education, and the number of articles on motivation in educational research journals is growing.

Despite this increased activity, there is still very little work on the specific problem of motivational design. Wlodkowski (1978) has developed an effective program for helping teachers learn how to help unmotivated students, and J. M. Keller (1979, 1983a, 1983b) has developed a more theory based, generic model for identifying motivational strategy needs and options. His model is intended for instructional designers, trainers, and teachers. However, all of this work will benefit from an increase in the number of people who are developing and testing alternative approaches.

The ability of educational designers to create instructional systems that are effective for students who want to learn has grown tremendously in the last several decades. Yet there is a lag in knowing how to systematically develop effective motivational components of instruction. Because motivation appears to be a major problem in many school systems, it is likely to receive more research and development in the future.

Footnotes

1. Reference qualifiers are included only with the first citation of a given reference.

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